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oxide of iron, and not to any effect on the metallic iron; and when it has ceased, the disturbing cause may be considered as exhausted. The experimental proofs of the truth of this explanation I will quote hereafter (1037).

815. Another precaution relates to the effect of accidental movements of the plates in the solution. If two platinum plates be put into a solution of this sulphuret of potassium, and the circuit be then completed, including a galvanometer, the arrangement, if perfect, will show no current; but if one of the plates be lifted up into the air for a few seconds and then replaced, it will be negative to the other, and produce a current lasting for a short time.¹ If the two plates be iron and platinum, or of any other metal or substance not acted on by the sulphuret, the same effect will be produced. In these cases, the current is due to the change wrought by the air on the film of sulphuretted solution adhering to the removed plate;² but a far less cause than this will produce a current, for if one of the platinum plates be removed, washed well, dried, and even heated, it will, on its re-introduction, almost certainly exhibit the negative state for a second or two.

816. These or other disturbing causes appear the greater in these experiments in consequence of the excellent conducting power of the solution used; but they do not occur if care be taken to avoid any disturbance of the plates or the solution, and then, as before said, the whole acquires a normal and perfectly inactive state.

817. Here then is an arrangement in which the contact of platinum and iron at *x* is at liberty to produce any effect which such a contact may have the power of producing; and yet what is the consequence? absolutely nothing. This is not because the electrolyte is so bad a conductor that a current of contact cannot pass, for currents far feebler than this is assumed to be pass readily (801); and the electrolyte employed is vastly superior in conducting power to those which are commonly used in voltaic batteries or circles, in which the current is still assumed to be dependent upon contact. The simple conclusion to which the experiment should lead is, in my opinion, that the contact of iron and platinum is absolutely

without any
electromotive force (823, 847, 877).

¹Marianini observed effects of this kind produced by exposure to the air, of one of two plates dipped in nitric acid.—*Annales de Chimie*, 1830, xlv. p. 42.

²Becquerel long since referred to the effect of such exposure of a plate, dipped in certain solutions, to the air. Generally the plate so exposed became positive on reimmersion.—*Annales de Chimie*, 1824, xxv. 405.